SAF-RC-030
Remaining Sites Confirmation Sampling - Other Solid
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) H9-02 MJP 03/29/06
INITIAL/DATE

COMMENTS:

SDG K0169 **SAF-RC-030**

Waste Site: 100-D-65

Date: 22 March 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Other Solid - Waste Site 100-D-65
Subject: Inorganics - Data Package No. K0169-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0169 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J110VL5	1/5/06	Solid	C	See note 1
J110VL6	1/5/06	Solid	C	See note 1

1 - ICP metals (6010B) and mercury (7471A).

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for mercury and 6 months for ICP metals.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to a matrix spike recovery outside QC limits (30.8%), all antimony results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (53.7%), all silicon results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

Due to an RPD outside QC limits (134%), all silicon results were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J10VL5/J10VL6) were submitted for analysis. Field duplicates are assessed using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All selenium results exceeded the RQL. Under the WCH statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data package No. K0169 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to a matrix spike recovery outside QC limits (30.8%), all antimony results were qualified as estimates and flagged "J".
- Due to an LCS recovery outside QC limits (53.7%), all silicon results were qualified as estimates and flagged "J".
- Due to an RPD outside QC limits (134%), all silicon results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

All selenium results exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: K0169	REVIEWER:	Project: 100-D-65	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony	J	All	MS recovery
Silicon	J	All	LCS recovery
Silicon	J	All	RPD

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD							
Lab: LLI	SDG: K0169						
Sample Numbe		J10VL5		J10VL6			
Remarks				Duplicate			
Sample Date		1/5/06		1/5/06			
Inorganics	RQL	Result	Q	Result	Q	Result	Q
Silver	0.2	0.58		0.66			
Aluminum		7810		8520			
Arsenic	10	21.8		21.5			
Boron		5.0		4.9			
Barium	2	98.8		106			
Beryllium		0.12		0.15			
Calcium		63300		64800			
Cadmium	0.2	0.81		0.89			
Cobalt		8.8		9.9			
Chromium	1	17.6		17.6			
Copper		31.8		33.6			
Iron		17100		19400			
Mercury	0.2	0.06		0.07			
Potassium		860		965			
Magnesium		6200		6700			
Manganese		258		294			
Molybdenum		0.88		0.64			
Sodium		580		578			
Nickel		9.9		10.2			
Lead	5	9.0		16.6			
Antimony		5.1	J	4.4	J		
Selenium	1	1.1	U	1.1	U		
Silicon		4820	J	634	J		
Vanadium		41.3		42.7			
Zinc	1	200		245			

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Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/10/06

CLIENT: TNOHANFORD RC-030 K0169 LVL LOT #: 0601L179

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J10VL5	Silver, Total	0.58		MG/KG	0.43	3.0
		Aluminum, Total	7810		MG/KG	5.6	3.0
		Arsenic, Total	21.8		MG/KG	1.0	3.0
		Boron, Total	5.0		MG/KG	0.83	3.0
		Barium, Total	98.8		MG/KG	0.06	3.0
		Beryllium, Total	0.12		MG/KG	0.03	3.0
		Calcium, Total	63300		MG/KG	3.7	3.0
		Cadmium, Total	0.81		MG/KG	0.22	3.0
		Cobalt, Total	8.8		MG/KG	0.37	3.0
		Chromium, Total	17.6		MG/KG	0.49	3.0
		Copper, Total	31.8		MG/KG	0.37	3.0
		Iron, Total	17100		MG/KG	9.9	3.0
		Mercury, Total	0.06		MG/KG	0.02	1.0
		Potassium, Total	860		MG/KG	17.1	3.0
		Magnesium, Total	6200		MG/KG	4.2	3.0
		Manganese, Total	258		MG/KG	0.06	3.0
		Molybdenum, Total	0.88		MG/KG	0.40	3.0
		Sodium, Total	580		MG/KG	0.52	3.0
		Nickel, Total	9.9		MG/KG	0.40	3.0
		Lead, Total	9.0		MG/KG	0.96	3.0
		Antimony, Total	5.1	J	MG/KG	1.2	3.0
		Selenium, Total	1.1	u	MG/KG	1.1	3.0
		Silicon, Total	4820	J	MG/KG	2.5	3.0
		Vanadium, Total	41.3		MG/KG	0.28	3.0
		Zinc, Total	200		MG/KG	0.15	3.0

3/20/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/10/06

CLIENT: TNUHANFORD RC-030 K0169 LVL LOT #: 0601L179

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
002	J10VL6	Silver, Total	0.66	MG/KG	0.43	3.0
		Aluminum, Total	8250	MG/KG	5.6	3.0
		Arsenic, Total	21.5	MG/KG	1.0	3.0
		Boron, Total	4.9	MG/KG	0.83	3.0
		Barium, Total	106	MG/KG	0.06	3.0
		Beryllium, Total	0.15	MG/KG	0.03	3.0
		Calcium, Total	64800	MG/KG	3.7	3.0
		Cadmium, Total	0.89	MG/KG	0.22	3.0
		Cobalt, Total	9.9	MG/KG	0.37	3.0
		Chromium, Total	17.6	MG/KG	0.49	3.0
		Copper, Total	33.6	MG/KG	0.37	3.0
		Iron, Total	19400	MG/KG	9.9	3.0
		Mercury, Total	0.07	MG/KG	0.02	1.0
		Potassium, Total	965	MG/KG	17.0	3.0
		Magnesium, Total	6700	MG/KG	4.2	3.0
		Manganese, Total	294	MG/KG	0.06	3.0
		Molybdenum, Total	0.64	MG/KG	0.40	3.0
		Sodium, Total	578	MG/KG	0.52	3.0
		Nickel, Total	10.2	MG/KG	0.40	3.0
		Lead, Total	16.6	MG/KG	0.95	3.0
		Antimony, Total	4.4 J	MG/KG	1.2	3.0
		Selenium, Total	1.1 u	MG/KG	1.1	3.0
		Silicon, Total	634 J	MG/KG	2.5	3.0
		Vanadium, Total	42.7	MG/KG	0.28	3.0
		Zinc, Total	245	MG/KG	0.15	3.0

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3/20/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-030
LVL#: 0601L179
SDG/SAF#: K0169/RC-030

W.O.#: 11343-606-001-9999-00
Date Received: 01-31-06

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 solid samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. The samples were reported with 3-fold dilutions for ICP metals due to high concentrations and sample matrix.

3. All analyses were performed within the required holding times with the exception of Mercury, which was analyzed 4 days past hold. The samples were received 26 days into the 28 day hold time.

4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon at 53.7%. Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low.

10. The matrix spike (MS) recoveries for 5 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J10VL5	Aluminum	66,000	92.7
	Iron	66,000	90.1
	Manganese	6,000	93.9
	Antimony	300	94.4
	Silicon	6,300	75.1

12. The duplicate analyses for 5 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

14. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

15. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

2/13/04
Date

jjw/m01-179

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-030-47	Page 1 of 1

Collector: STANKOVICH/HUDSON	Company Contact: Mike Stankovich	Telephone No.: 531-7620	Project Coordinator: KESSNER, JH	Price Code: 9C	Data Turnaround: 15 Days
Project Designation: Remaining Sites Confirmation Sampling - Other Solid	Sampling Location: 100-D-65		SAF No.: RC-030	Air Quality ☐	
Ice Chest No.: AFS-04-044	Field Logbook No.: EL-1578-9	COA: C10DR16700	Method of Shipment: Fed Ex		
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060191		Bill of Lading/Air Bill No.: See Off Site Property Control form		

POSSIBLE SAMPLE HAZARDS/REMARKS

None < POT limits

Special Handling and/or Storage

COOL 4 Degrees C

0000016

Preservation	None	None	Cool 4C									
Type of Container	G/P	G/P	aG									
No. of Container(s)	2	0	0									
Volume	250mL	60mL	60mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - ~~SW8151~~ 8151				RCF 13548					

Sample No.	Matrix *	Sample Date	Sample Time										
J10VL5	OTHER SOLID	1-5-06	1030	X	X	X							
J10VL6	OTHER SOLID	1-5-06	1030	X	X	X							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: BILL HUDSON	Date/Time: 1/6/06 1510	Received By/Stored In: 3728-3B	Date/Time: 1/5/06 1510
Relinquished By/Removed From: 3728/3B	Date/Time: 1-10-06 1300	Received By/Stored In: RZ Stettler R.J. Stettler	Date/Time: 1-10-06 1300
Relinquished By/Removed From: RZ Stettler R.J. Stettler	Date/Time: 1-10-06 1330	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time:	Received By/Stored In: [illegible]	Date/Time: 01/11/06 9:15
Relinquished By/Removed From: Alex Kellett	Date/Time: 1/30/06 16:00	Received By/Stored In:	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 1-31-06 0910	Received By/Stored In: [signature]	Date/Time: 1-31-06 0910

SPECIAL INSTRUCTIONS

J10VL5 and J10VL6 to be analyzed for radiological analytes by Eberline then trans-shipped to Lionville Lab for Chemical analytes. SAMPLES TO BE STORED IN MANNER THAT MEETS COOLING REQUIREMENTS FOR PCB ANALYSIS

(1) Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]; Gamma Spec - Add-on [Americium-241]; Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium [Uranium-233/234, Uranium-235, Uranium-238]; Total Uranium

(2) ICP Metals - 6010A (SW-846) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc]; Mercury - 7471 - (CV)

SDG# K0170

Matrix *
S=Soil
SE=Sediment
SO=Solids
SI=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-D-65		DATA PACKAGE:	K0169	
VALIDATOR:	LLI	LAB:	LLI	DATE:	3/20/06
			SDG:	K0169	
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J10VL5	J10VL6				
			Solid	Soil 3/22/06	

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

ICP interference checks acceptable? ..... Yes No N/A

ICV and CCV checks performed on all instruments? ..... Yes No N/A

ICV and CCV checks acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A
ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: no FB

4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments: Antimony - 30.8% MS - J all
Silicon - 53.7% LCS - J all no Rs

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes (No) N/A
Duplicate results acceptable? ..... Yes (No) N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)
Field duplicate RPD values acceptable? ..... (Yes) No N/A
Field split RPD values acceptable? ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: Dup Silicon 13470 - Jeff

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed? ..... Yes No (N/A)
ICP serial dilution %D values acceptable? ..... Yes No (N/A)
ICP post digestion spike required? ..... Yes No (N/A)
ICP post digestion spike values acceptable? ..... Yes No (N/A)
Standards traceable? ..... Yes No (N/A)
Standards expired? ..... Yes No (N/A)
Transcription/calculation errors? ..... Yes No (N/A)
Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)

Duplicate injections performed as required?	Yes	No	N/A
Duplicate injection %RSD values acceptable?	Yes	No	N/A
Analytical spikes performed as required?	Yes	No	N/A
Analytical spike recoveries acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
MSA performed as required?	Yes	No	N/A
MSA results acceptable?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A

Comments:_____

8. HOLDING TIMES (all levels)

Samples properly preserved?	Yes	No	N/A
Sample holding times acceptable?	Yes	No	N/A

Comments:_____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: Four 5/20 Selenium – all are

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/10/06

CLIENT: TNUHANFORD RC-030 K0169 LVL LOT #: 0601L179

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	06L0079-MB1	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Aluminum, Total	1.8 u	MG/KG	1.8	1.0
		Arsenic, Total	0.34 u	MG/KG	0.34	1.0
		Boron, Total	0.27 u	MG/KG	0.27	1.0
		Barium, Total	0.02 u	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Calcium, Total	2.8	MG/KG	1.2	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.12 u	MG/KG	0.12	1.0
		Chromium, Total	0.16 u	MG/KG	0.16	1.0
		Copper, Total	0.12 u	MG/KG	0.12	1.0
		Iron, Total	3.2 u	MG/KG	3.2	1.0
		Potassium, Total	5.5 u	MG/KG	5.5	1.0
		Magnesium, Total	1.4 u	MG/KG	1.4	1.0
		Manganese, Total	0.02	MG/KG	0.02	1.0
		Molybdenum, Total	0.13 u	MG/KG	0.13	1.0
		Sodium, Total	0.46	MG/KG	0.17	1.0
		Nickel, Total	0.13 u	MG/KG	0.13	1.0
		Lead, Total	0.31 u	MG/KG	0.31	1.0
		Antimony, Total	0.40 u	MG/KG	0.40	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
		Silicon, Total	0.82 u	MG/KG	0.82	1.0
		Vanadium, Total	0.09 u	MG/KG	0.09	1.0
		Zinc, Total	0.05 u	MG/KG	0.05	1.0
BLANK1	06C0022-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/10/06

CLIENT: TNUHANFORD RC-030 K0169 LVL LOT #: 0601L179

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J10VL5	Silver, Total	5.3	0.58	5.1	92.6	3.0
		Aluminum, Total	8860	7810	204	512.9*	3.0
		Arsenic, Total	202	21.8	204	88.4	3.0
		Boron, Total	92.7	5.0	102	86.1	3.0
		Barium, Total	290	98.8	204	93.8	3.0
		Beryllium, Total	4.9	0.12	5.1	93.8	3.0
		Calcium, Total	65500	63300	2540	88.5*	3.0
		Cadmium, Total	5.3	0.81	5.1	88.1	3.0
		Cobalt, Total	56.7	8.8	50.9	94.2	3.0
		Chromium, Total	37.6	17.6	20.4	98.0	3.0
		Copper, Total	56.3	31.8	25.5	96.1	3.0
		Iron, Total	20300	17100	102	3200 *	3.0
		Mercury, Total	0.37	0.06	0.35	89.9	1.0
		Potassium, Total	3290	860	2540	95.4	3.0
		Magnesium, Total	8850	6200	2540	104.2	3.0
		Manganese, Total	336	258	50.9	152.3*	3.0
		Molybdenum, Total	91.1	0.88	102	88.6	3.0
		Sodium, Total	3010	580	2540	95.5	3.0
		Nickel, Total	57.3	9.9	50.9	93.1	3.0
		Lead, Total	55.1	9.0	50.9	90.6	3.0
		Antimony, Total	20.8	5.1	50.9	30.8	3.0
		Selenium, Total	176	1.1 u	204	86.4	3.0
		Silicon, Total	768	4820	102	-4000. *	3.0
		Vanadium, Total	98.1	41.3	50.9	111.6	3.0
		Zinc, Total	239	200	50.9	78.2	3.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/10/06

CLIENT: TNUHANFORD RC-030 K0169 LVL LOT #: 0601L179

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J10VL5	Silver, Total	0.58	0.43u	~~NC~~ 200 PW 2/10/06	3.0
		Aluminum, Total	7810	7520	3.8	3.0
		Arsenic, Total	21.8	20.2	7.6	3.0
		Boron, Total	5.0	5.0	0.00	3.0
		Barium, Total	98.8	93.6	5.4	3.0
		Beryllium, Total	0.12	0.11	2.7	3.0
		Calcium, Total	63300	59000	6.9	3.0
		Cadmium, Total	0.81	0.70	13.9	3.0
		Cobalt, Total	8.8	8.8	0.00	3.0
		Chromium, Total	17.6	16.1	8.9	3.0
		Copper, Total	31.8	30.4	4.5	3.0
		Iron, Total	17100	17500	2.6	3.0
		Mercury, Total	0.06	0.08	34.8	1.0
		Potassium, Total	860	864	0.52	3.0
		Magnesium, Total	6200	5930	4.6	3.0
		Manganese, Total	258	250	3.2	3.0
		Molybdenum, Total	0.88	0.58	41.7	3.0
		Sodium, Total	580	571	1.5	3.0
		Nickel, Total	9.9	9.2	7.3	3.0
		Lead, Total	9.0	8.4	6.9	3.0
		Antimony, Total	5.1	3.5	37.2	3.0
		Selenium, Total	1.1 u	1.1 u	NC	3.0
		Silicon, Total	4820	951	134.1	3.0
		Vanadium, Total	41.3	42.1	1.9	3.0
		Zinc, Total	200	192	4.0	3.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 02/10/06

CLIENT: TNUHANFORD RC-030 K0169 LVL LOT #: 0601L179

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	06L0079-LC1	Silver, LCS	47.2	50.0	MG/KG	94.4
		Aluminum, LCS	474	500	MG/KG	94.9
		Arsenic, LCS	904	1000	MG/KG	90.4
		Boron, LCS	457	500	MG/KG	91.4
		Barium, LCS	468	500	MG/KG	93.6
		Beryllium, LCS	24.0	25.0	MG/KG	96.0
		Calcium, LCS	2440	2500	MG/KG	97.4
		Cadmium, LCS	23.8	25.0	MG/KG	95.2
		Cobalt, LCS	241	250	MG/KG	96.3
		Chromium, LCS	49.1	50.0	MG/KG	98.2
		Copper, LCS	120	125	MG/KG	96.1
		Iron, LCS	491	500	MG/KG	98.3
		Potassium, LCS	2240	2500	MG/KG	89.5
		Magnesium, LCS	2330	2500	MG/KG	93.3
		Manganese, LCS	74.0	75.0	MG/KG	98.7
		Molybdenum, LCS	485	500	MG/KG	97.1
		Sodium, LCS	2240	2500	MG/KG	89.5
		Nickel, LCS	191	200	MG/KG	95.7
		Lead, LCS	239	250	MG/KG	95.5
		Antimony, LCS	277	300	MG/KG	92.3
		Selenium, LCS	840	1000	MG/KG	84.0
		Silicon, LCS	269	500	MG/KG	53.7
		Vanadium, LCS	243	250	MG/KG	97.2
		Zinc, LCS	94.2	100	MG/KG	94.2
LCS1	06C0022-LC1	Mercury, LCS	6.3	6.2	MG/KG	101.7

Date: 22 March 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Other Solid - Waste Site 100-D-65
Subject: PCB - Data Package No. K0169-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0169 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J110VL5	1/5/06	Solid	C	See note 1
J110VL7	1/5/06	Solid	C	See note 1

1 – PCBs by 8082

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

- **Holding Times**

Sample data were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded by less than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

Due to the holding time being exceeded by less than twice the limit, all PCB results were qualified as estimates and flagged "J".

- **Method Blank**

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated

with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J110VL5/J110VL6) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicates were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data Package No. K0169 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to the holding time being exceeded by less than twice the limit, all PCB results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

PCB DATA QUALIFICATION SUMMARY*

SDG: K0169	REVIEWER: TLL	Project: 100-D-65	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All	J	All	Holding time

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

PCB ANALYSIS, SOLID MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD					
Laboratory: LLI	SDG: K0169				
Sample Number		J10VL5		J10VL6	
Remarks				Duplicate	
Sample Date		1/5/06		1/5/06	
Extraction Date		2/1/06		2/1/06	
Analysis Date		2/3/06		2/3/06	
PCB	RQL	Result	Q	Result	Q
Aroclor-1016	100	36	UJ	36	UJ
Aroclor-1221	100	36	UJ	36	UJ
Aroclor-1232	100	36	UJ	36	UJ
Aroclor-1242	100	36	UJ	36	UJ
Aroclor-1248	100	36	UJ	36	UJ
Aroclor-1254	100	36	UJ	36	UJ
Aroclor-1260	100	36	UJ	36	UJ

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

0000000005

	Cust ID:	J10VL5	J10VL5	J10VL5	J10VL6	PBLKAX	PBLKAX BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	06LE0076-MB1	06LE0076-MB1
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	85 %	80 %	83 %	79 %	80 %	89 %
	Decachlorobiphenyl	88 %	86 %	88 %	88 %	85 %	90 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		36 U J	92 %	93 %	36 U J	33 U	107 %
Aroclor-1221		36 U	36 U	36 U	36 U	33 U	33 U
Aroclor-1232		36 U	36 U	36 U	36 U	33 U	33 U
Aroclor-1242		36 U	36 U	36 U	36 U	33 U	33 U
Aroclor-1248		36 U	36 U	36 U	36 U	33 U	33 U
Aroclor-1254		36 U	36 U	36 U	36 U	33 U	33 U
Aroclor-1260		36 U	103 %	106 %	36 U	33 U	114 %

0000011

VC 3/20/06

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-030
LVL #: 0601L179
SDG/SAF # K0169/RC-030

W.O. #: 11343-606-001-9999-00
Date Received: 01-31-2006

PCB

Two (2) solid samples were collected on 01-05-2006.

The samples and their associated QC samples were extracted on 02-01-2006 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 02-03-2006. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy with the exception of item # 2.

2. Samples were received outside the required extraction holding time. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

3. The samples and their associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.

4. The method blank was below the reporting limits for all target compounds.

5. All surrogate recoveries were within acceptance criteria.

6. The blank spike recoveries were within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

8. The initial calibrations associated with this data set were within acceptance criteria.

9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

11. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

2/10/06
Date

som\r:\group\data\pest\tnu hanford\0601-179.pcbs
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 1 pages.

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 060CUX

Initiator: DE
Date: 2/3/06
Client: TWU

Batch: 0601L179, 178
Samples:
Method: SW846/MCAWW/CLP/

Parameter: OCB
Matrix: SLD
Prep Batch: 060E0076

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary) Reviewed out of Hold. Thus extracted out of HOLD

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

narrate

4. Project Manager Instructions...signature/date: 2/4/06

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

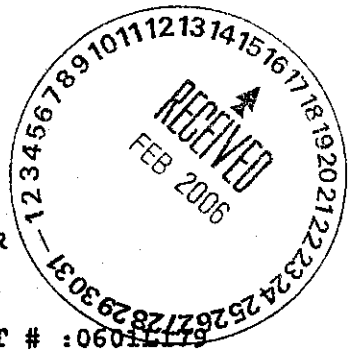
5. Final Action...signature/date: 2/14/06 Other Explanation:

✓ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
✓	X Project Mgr: Stone/Johnson	✓	__ GC/LC: Kiger
__	__ Data Management: Stilwell	__	__ MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-In: Perry
		__	__ Admin: _____
		__	__ Other: _____

QA-105-A-0805



Lionville Laboratory, Inc.
PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-030 K0169

DATE RECEIVED: 01/31/06 LVL LOT # :0601L179

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J10VL5	001	SO	06LE0076	01/05/06	02/01/06	02/03/06
J10VL5	001 MS	SO	06LE0076	01/05/06	02/01/06	02/03/06
J10VL5	001 MSD	SO	06LE0076	01/05/06	02/01/06	02/03/06
J10VL6	002	SO	06LE0076	01/05/06	02/01/06	02/03/06
LAB QC:						
PBLKAX	MB1	S	06LE0076	N/A	02/01/06	02/03/06
PBLKAX	MB1 BS	S	06LE0076	N/A	02/01/06	02/03/06

2/3/16

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-030-47	Page 1 of 1
Collector STANKOVICH/HUDSON	Company Contact: Mike Stankovich Telephone No.: 531-7620	Project Coordinator KESSNER, JH	Price Code 9C Data Turnaround 15 Days
Project Designation Remaining Sites Confirmation Sampling - Other Solid	Sampling Location 100-D-65	SAF No. RC-030	Air Quality ☐
Ice Chest No. AFS-04-044	Field Logbook No.: EL-1578-9 COA: C10DR16700	Method of Shipment Fed Ex	
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A060191	Bill of Lading/Air Bill No. See Off Site Property Control form	

0000010

POSSIBLE SAMPLE HAZARDS/REMARKS
None < DOT limits

Special Handling and/or Storage
COOL 4 Degrees C

000016

SAMPLE ANALYSIS SDG# K0170

			Preservation	None	None	Cool 4C								
			Type of Container	G/P	G/P	aG								
			No. of Container(s)	2	0	0								
			Volume	250mL	60mL	60mL				RCF				
			Sample Analysis	See item (1) in Special Instructions.	See item (2) in Special Instructions.	PCBs - 8082; ~~Pesticides - 8081; Chloro-Herbicides - EPA8151~~ 1/11/05				13848				
Sample No.	Matrix *	Sample Date	Sample Time											
J10VL5	OTHER SOLID	1-5-06	1030	X	X	X								
J10VL6	OTHER SOLID	1-5-06	1030	X	X	X								

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Bill Hudson [signature]	1/5/06 1510	3728 · 3B	1/5/06 1510
3728 / 3B	1-10-06 1300	RZ Steffler [signature]	1-10-06 1300
RZ Steffler [signature]	1-10-06 1330	Fed Ex	
Fed Ex		[signature]	01/11/06 9:15
[signature]	1/30/06 16:00		
Fed Ex	1-31-06 0910	[signature]	1-31-06 0910

SPECIAL INSTRUCTIONS
J10VL5 and J10VL6 to be analyzed for radiological analytes by Eberline then trans-shipped to Lionville Lab for Chemical analytes. SAMPLES TO BE STORED IN MANNER THAT MEETS COOLING REQUIREMENTS FOR PCB ANALYSIS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium
(2) ICP Metals - 6010A (SW-846) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

SDG# K0170

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-D-65		DATA PACKAGE:	K0169	
VALIDATOR:	JLI	LAB:	WLI	DATE:	3/20/06
			SDG:	K0169	
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J10VL5	J10VL6				
			solid	~~SED~~ 12K	

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

DDT and endrin breakdowns acceptable? ..... Yes No (N/A)

Comments: _____

PCB DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No (N/A)
Calibration blank results acceptable? (Levels D, E) ..... Yes No (N/A)
Laboratory blanks analyzed? ..... (Yes) No N/A
Laboratory blank results acceptable? ..... (Yes) No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes (No) N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Comments: no FD

4. ACCURACY (Levels C, D, and E)

Surrogates analyzed? ..... (Yes) No N/A
Surrogate recoveries acceptable? ..... (Yes) No N/A
Surrogates traceable? (Levels D, E) ..... Yes No (N/A)
Surrogates expired? (Levels D, E) ..... Yes No (N/A)
MS/MSD samples analyzed? ..... (Yes) No N/A
MS/MSD results acceptable? ..... (Yes) No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)
LCS/BSS samples analyzed? ..... (Yes) No N/A
LCS/BSS results acceptable? ..... (Yes) No N/A
Standards traceable? (Levels D, E) ..... Yes No (N/A)
Standards expired? (Levels D, E) ..... Yes No (N/A)
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Performance audit sample(s) analyzed? ..... Yes (No) N/A
Performance audit sample results acceptable? ..... Yes No (N/A)
Comments: no DAS

PCB DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... (Yes) No N/A
Duplicate results acceptable? ..... (Yes) No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No (N/A)
MS/MSD standards expired? (Levels D, E) ..... Yes No (N/A)
Field duplicate RPD values acceptable? ..... (Yes) No N/A
Field split RPD values acceptable? ..... (Yes) No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)
Comments: _____

6. SYSTEM PERFORMANCE (Levels D and E)

Chromatographic performance acceptable? ..... Yes No (N/A)
Positive results resolved acceptably? ..... Yes No (N/A)
Comments: _____

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... (Yes) No N/A
Sample holding times acceptable? ..... Yes (No) N/A
Comments: 12X over HT Tall

PCB DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E)	Yes	No	N/A
Compound quantitation acceptable? (Levels D, E)	Yes	No	N/A
Results reported for all requested analyses?	Yes	No	N/A
Results supported in the raw data? (Levels D, E)	Yes	No	N/A
Samples properly prepared? (Levels D, E)	Yes	No	N/A
Detection limits meet RDL?	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A

Comments:_____

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other absorbent) cleanup performed?	Yes	No	N/A
Lot check performed?	Yes	No	N/A
Check recoveries acceptable?	Yes	No	N/A
GPC cleanup performed?	Yes	No	N/A
GPC check performed?	Yes	No	N/A
GPC check recoveries acceptable?	Yes	No	N/A
GPC calibration performed?	Yes	No	N/A
GPC calibration check performed?	Yes	No	N/A
GPC calibration check retention times acceptable?	Yes	No	N/A
Check/calibration materials traceable?	Yes	No	N/A
Check/calibration materials Expired?	Yes	No	N/A
Analytical batch QC given similar cleanup?	Yes	No	N/A
Transcription/Calculation Errors?	Yes	No	N/A

Comments:_____

Date: 22 March 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Other Solid - Waste Site 100-D-65
Subject: Radiochemistry - Data Package No. K0169-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0169 prepared by Eberline Services (EB). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Matrix	Validation	Date
J110VL5	1/5/06	Solid	C	See note 1
J110VL6	1/5/06	Solid	C	See note 1

1 – Gross alpha/beta, total strontium, nickel-63, technetium-99, alpha spectroscopy (isotopic uranium) and gamma spectroscopy.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the minimum detectable activity (MDA), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

All blank results were acceptable.

Field (Equipment) Blank

No equipment blanks were submitted for analysis.

- **Accuracy**

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 70-130%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

Due to an LCS recovery outside QC limits (66%), all gross alpha results were qualified as estimates and flagged "J".

Due to the lack of a matrix spike analysis, all nickel-63 results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Laboratory Duplicates**

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the contract required detection limit (CRDL) and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All duplicate results were acceptable.

Field Duplicates

One set of field duplicates (J110VL5/J110VL6) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. The RPDs for gross beta (173%), cobalt-60 (58%) and europium-154 (35%) were outside QC limits. Under the WCH statement of work, no qualification is required. All other field duplicates were acceptable.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. Four analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

- **Completeness**

Data package No. K0169 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to an LCS recovery outside QC limits (66%), all gross alpha results were qualified as estimates and flagged "J". Due to the lack of a matrix spike analysis, all nickel-63 results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Four analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI statement of work are as follows:

U - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

Appendix 2

Summary of Data Qualification

RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0169	REVIEWER: Project: 100-D-65		PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Gross alpha	J	All	LCS recovery
Nickel-63	J	All	No MS analysis

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD					
Laboratory: EB					
Case	SDG: K0169				
Sample Number		J10VL5		J10VL6	
Remarks				Duplicate	
Sample Date		1/5/06		1/5/06	
Radiochemistry	RQL	Result	Q	Result	Q
Gross alpha		5.38	J	0.399	UJ
Gross beta		20.0		1.44	
Nickel-63	30	44.5	J	29.5	J
Total Strontium	1	0.206		0.170	U
Technetium-99	1	-0.099	U	-0.019	U
Total uranium (ug/L)		1.21		1.17	
Uranium-233/234	1	0.547		0.373	
Uranium-235	1	0	U	0.033	U
Uranium-238	1	0.384		0.428	
Plutonium-238	1	0	U	0	U
Plutonium-239/240	1	0.034	U	0.064	U
Americium-241	1	0.106	U	0.150	U
Potassium-40		U	U	5.47	
Cobalt 60	0.05	1.06		0.582	
Cesium 137	0.05	5.71		3.85	
Radium-226		U	U	U	U
Radium-228		U	U	U	U
Europium 152	0.1	11.2		7.89	
Europium 154	0.1	U	U*	U	U*
Europium 155	0.1	U	U*	U	U*
Thorium-228		U	U	U	U
Thorium-232		U	U	U	U
Uranium-235(gea)		U	U	U	U
Uranium-238(gea)		U	U	U	U
Americium-241(gea)		U	U	U	U

000010

* - RQL exceeded

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize potential miss-interpretation of results. All other qualifiers shown were applied during validation.

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0169

7707-001 J10VL5

DATA SHEET

SDG	7707	Client/Case no	Hanford		SDG K0169
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R601053-01	Client sample id	J10VL5		
Dept sample id	7707-001	Location/Matrix	100-D-65		SOLID
Received	01/11/06	Collected/Weight	01/05/06 10:30	437.5 g	
% solids	100.0	Custody/SAF No	RC-030-047	RC-030	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	5.38	3.3	4.0	10	J	93A
Gross Beta	12587-47-2	20.0	4.7	5.9	15		93B
Nickel 63	13981-37-8	44.5	3.5	3.7	30	J	NI_L
Total Strontium	SR-RAD	0.206	0.11	0.17	1.0		SR
Technetium 99	14133-76-7	-0.099	0.21	0.67	15	U	TC
Total Uranium (ug/g)	7440-61-1	1.21	0.13	0.016	1.0		U_T
Uranium 233/234	U-233/234	0.547	0.18	0.11	1.0		U
Uranium 235	15117-96-1	0	0.036	0.14	1.0	U	U
Uranium 238	U-238	0.384	0.15	0.11	1.0		U
Plutonium 238	13981-16-3	0	0.068	0.26	1.0	U	PU
Plutonium 239/240	PU-239/240	0.034	0.068	0.26	1.0	U	PU
Americium 241	14596-10-2	0.106	0.14	0.27	1.0	U	AM
Potassium 40	13966-00-2	U		9.1		U	GAM
Cobalt 60	10198-40-0	1.06	0.10	0.076	0.050		GAM
Cesium 137	10045-97-3	5.71	0.16	0.12	0.10		GAM
Radium 226	13982-63-3	U		0.50	0.10	U	GAM
Radium 228	15262-20-1	U		0.70	0.20	U	GAM
Europium 152	14683-23-9	11.2	0.35	0.31	0.10		GAM
Europium 154	15585-10-1	U		1.0	0.10	U	GAM
Europium 155	14391-16-3	U		0.24	0.10	U	GAM
Thorium 228	14274-82-9	U		0.48		U	GAM
Thorium 232	TH-232	U		0.70		U	GAM
Uranium 235	15117-96-1	U		0.31		U	GAM
Uranium 238	U-238	U		11		U	GAM
Americium 241	14596-10-2	U		0.21		U	GAM

Remaining Sites Confirmation Smplng

3/29/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/27/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0169

7707-002 J10VL6

DATA SHEET

SDG	7707	Client/Case no	Hanford	SDG K0169	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R601053-02	Client sample id	J10VL6		
Dept sample id	7707-002	Location/Matrix	100-D-65	SOLID	
Received	01/11/06	Collected/Weight	01/05/06 10:30	484.8 g	
% solids	100.0	Custody/SAF No	RC-030-047	RC-030	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Gross Alpha	12587-46-1	0.399	0.31	0.41	10	U J	93A
Gross Beta	12587-47-2	1.44	0.54	0.80	15		93B
Nickel 63	13981-37-8	29.5	3.2	3.7	30	J	NI_L
Total Strontium	SR-RAD	0.170	0.12	0.18	1.0	U	SR
Technetium 99	14133-76-7	-0.019	0.21	0.59	15	U	TC
Total Uranium (ug/g)	7440-61-1	1.17	0.13	0.016	1.0		U_T
Uranium 233/234	U-233/234	0.373	0.14	0.11	1.0		U
Uranium 235	15117-96-1	0.033	0.034	0.13	1.0	U	U
Uranium 238	U-238	0.428	0.17	0.11	1.0		U
Plutonium 238	13981-16-3	0	0.13	0.49	1.0	U	PU
Plutonium 239/240	PU-239/240	0.064	0.13	0.49	1.0	U	PU
Americium 241	14596-10-2	0.150	0.15	0.29	1.0	U	AM
Potassium 40	13966-00-2	5.47	0.91	0.79			GAM
Cobalt 60	10198-40-0	0.582	0.10	0.10	0.050		GAM
Cesium 137	10045-97-3	3.85	0.24	0.19	0.10		GAM
Radium 226	13982-63-3	U		0.26	0.10	U	GAM
Radium 228	15262-20-1	U		0.58	0.20	U	GAM
Europium 152	14683-23-9	7.89	0.57	0.49	0.10		GAM
Europium 154	15585-10-1	U		0.38	0.10	U	GAM
Europium 155	14391-16-3	U		0.34	0.10	U	GAM
Thorium 228	14274-82-9	U		0.21		U	GAM
Thorium 232	TH-232	U		0.58		U	GAM
Uranium 235	15117-96-1	U		0.46		U	GAM
Uranium 238	U-238	U		18		U	GAM
Americium 241	14596-10-2	U		0.26		U	GAM

Remaining Sites Confirmation Smplng

3/20/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/27/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K0169 was composed of two other solid samples designated under SAF No. RC-030 with a Project Designation of: Remaining Sites Confirmation Sampling – Other Solid. The Sampling Location was 100-D-65.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on January 27, 2006.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

The gross alpha LCS (66%) was below the contract lower limit of 70%. No other problems were encountered during the course of the analyses.

2.2 Nickel-63 Analysis

No problems were encountered during the course of the analyses.

2.3 Total Strontium Analysis

No problems were encountered during the course of the analyses.

2.4 Technetium-99 Analysis

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.6 Total Uranium Analysis

No problems were encountered during the course of the analyses.

2.7 Isotopic Plutonium Analysis

No problems were encountered during the course of the analyses.

2.8 Americium-241 Analysis

No problems were encountered during the course of the analyses.

2.9 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa C. Mannion
Senior Program Manager

2/08/06
Date

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-030-47	Page 1 of 1

Collector: STANKOVICH/HUDSON	Company Contact: Mike Stankovich — Telephone No.: 531-7620	Project Coordinator: KESSNER, JH	Price Code: 9C — Data Turnaround: 15 Days
Project Designation: Remaining Sites Confirmation Sampling - Other Solid	Sampling Location: 100-D-65 K0169 (7707)	SAF No.: RC-030	Air Quality: ☐
Ice Chest No.: AFS-04-044	Field Logbook No.: EL-1578-9 — COA: C10DR16700	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES/LIONVILLE	Offsite Property No.: A060191	Bill of Lading/Air Bill No.: See Off Site Property Control form	

POSSIBLE SAMPLE HAZARDS/REMARKS

None < DOT limits

Special Handling and/or Storage

COOL 4 Degrees C

Preservation	None	None	Cool 4C									
Type of Container	G/P	G/P	aG									
No. of Container(s)	2	0	0									
Volume	250mL	60mL	60mL						RCF			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	PCBs - 8082; ~~Pesticides - 8081; Chloro-Herbicides - ERA8151~~ 1/9/06						13848			

0000016

Sample No.	Matrix *	Sample Date	Sample Time										
J10VL5	OTHER SOLID	1-5-06	1030	X	X	X							
J10VL6	OTHER SOLID	1-5-06	1030	X	X	X							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: BILL HUDSON	Date/Time: 1/5/06 1510	Received By/Stored In: 3728-3B	Date/Time: 1/5/06 1510
Relinquished By/Removed From: 3728/3B	Date/Time: 1-10-06 1300	Received By/Stored In: RZ Stoffler R.J. Stoffler	Date/Time: 1-10-06 1300
Relinquished By/Removed From: RZ Stoffler R.J. Stoffler	Date/Time: 1330 1-10-06	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time:	Received By/Stored In:	Date/Time: 01/11/06 9:15
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

J10VL5 and J10VL6 to be analyzed for radiological analytes by Eberline then trans-shipped to Lionville Lab for Chemical analytes. SAMPLES TO BE STORED IN MANNER THAT MEETS COOLING REQUIREMENTS FOR PCB ANALYSIS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium

(2) ICP Metals - 6010A (SW-846) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-D-65		DATA PACKAGE:	K0169	
VALIDATOR:	TCT	LAB: EB		DATE:	3/20/06
			SDG:	K0169	

ANALYSES PERFORMED

Gross Alpha/Beta Total Uranium	Strontium-90 Radium-22	Technetium-99 Tritium	Alpha Spectroscopy	Gamma Spectroscopy	n.-63

SAMPLES/MATRIX

J10VL5 J10VL6

solid

1. Completeness ..... ☐ N/A

Technical verification forms present? ..... Yes No N/A

Comments: _____

2. Initial Calibration (Levels D, E) ..... ☒ N/A

Instruments/detectors calibrated? ..... Yes No N/A

Initial calibration acceptable? ..... Yes No N/A

Standards NIST traceable? ..... Yes No N/A

Standards Expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

3. Continuing Calibration (Levels D, E) ☒ N/A

Calibration checked within required frequency? ..... Yes No N/A

Calibration check acceptable? ..... Yes No N/A

Calibration check standards traceable? ..... Yes No N/A

Calibration check standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

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4. Background Counts (Levels D, E) ..... ☒ N/A

Background Counts checked within required frequency? ..... Yes No N/A

Background Counts acceptable? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

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5. Blanks (Levels B, C, D, E) ..... ☐ N/A

Method blank analyzed within required frequency? ..... (Yes) No N/A

Method blank results acceptable? ..... (Yes) No N/A

Analytes detected in method blank? ..... Yes (No) N/A

Field blank(s) analyzed? ..... Yes (No) N/A

Field blank results acceptable? ..... Yes No (N/A)

Analytes detected in field blank(s)? ..... Yes No (N/A)

Transcription/Calculation Errors? (Levels D, E) ..... Yes No (N/A)

Comments: no FB

6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) ..... ☐ N/A

LCS /BSS analyzed within required frequency? ..... (Yes) No N/A

LCS/BSS recoveries acceptable? ..... Yes (No) N/A

LCS/BSS traceable? (Levels D,E) ..... Yes No (N/A)

LCS/BSS expired? (Levels D,E) ..... Yes No (N/A)

LCS/BSS levels correct? (Levels D,E) ..... Yes No (N/A)

Transcription/Calculation Errors? (Levels D, E) ..... Yes No (N/A)

Comments: gr alpha - 6670 - J all

7. Chemical Carrier Recovery (Levels C, D, E) ..... ☒ N/A

Chemical carrier added? ..... Yes No N/A

Chemical recovery acceptable? ..... Yes No N/A

Chemical carrier traceable? (Levels D, E) ..... Yes No N/A

Chemical carrier expired? (Levels D, E) ..... Yes No N/A

Transcription/Calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

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8. Tracer Recovery (Levels C, D, E) ..... ☐ N/A

Tracer added? ..... Yes No N/A

Tracer recovery acceptable? ..... Yes No N/A

Tracer traceable? (Levels D, E) ..... Yes No N/A

Tracer expired? (Levels D, E) ..... Yes No N/A

Transcription/Calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

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9. Matrix Spikes (Levels C, D, E) ..... ☐ N/A

Matrix spike analyzed? ..... Yes No N/A

Spike recoveries acceptable? ..... Yes No N/A

Spike source traceable? (Levels D, E) ..... Yes No N/A

Spike source expired? Levels D, E) ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: no N1-63 ms - Jall

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10. Duplicates (Levels C, D, E) ..... ☐ N/A

Duplicates Analyzed at required frequency? ..... (Yes) No N/A

RPD Values Acceptable? ..... (Yes) No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No (N/A)

Comments: _____

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11. Field QC Samples (Levels C, D E) ..... ☐ N/A

Field duplicate sample(s) analyzed? ..... (Yes) No N/A

Field duplicate RPD values acceptable? ..... Yes (No) N/A

Field split sample(s) analyzed? ..... Yes (No) N/A

Field split RPD values acceptable? ..... Yes No (N/A)

Performance audit sample(s) analyzed? ..... Yes (No) N/A

Performance audit sample results acceptable? ..... Yes No (N/A)

Comments: Sr beta - (173%) Co-60 (58%) Eu-154 (33%)

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12. Holding Times (All levels)

Are sample holding times acceptable? ..... (Yes) No N/A

Comments: _____

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13. Results and Detection Limits (All Levels) ☐ N/A

Results reported for all required sample analyses?	Yes	No	N/A
Results supported in raw data?(Levels D, E)	Yes	No	N/A
Results Acceptable? (Levels D, E)	Yes	No	N/A
Transcription/Calculation errors? (Levels D, E)	Yes	No	N/A
MDA's meet required detection limits?	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A

Comments: 4 over

Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0169

7707-004 Method Blank

METHOD BLANK

SDG	7707	Client/Case no	Hanford SDG K0169
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R601053-04	Client sample id	Method Blank
Dept sample id	7707-004	Material/Matrix	SOLID
		SAF No	RC-030

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Gross Alpha	12587-46-1	-0.270	2.1	4.5	10	U	93A
Gross Beta	12587-47-2	-0.680	3.6	6.2	15	U	93B
Nickel 63	13981-37-8	-0.225	1.8	3.2	30	U	NI_L
Total Strontium	SR-RAD	-0.045	0.11	0.25	1.0	U	SR
Technetium 99	14133-76-7	0.090	0.38	0.55	15	U	TC
Total Uranium (ug/g)	7440-61-1	-0.001	0.007	0.016	1.0	U	U_T
Uranium 233/234	U-233/234	0	0.024	0.091	1.0	U	U
Uranium 235	15117-96-1	0.014	0.029	0.11	1.0	U	U
Uranium 238	U-238	0	0.024	0.091	1.0	U	U
Plutonium 238	13981-16-3	0	0.093	0.35	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.093	0.35	1.0	U	PU
Americium 241	14596-10-2	0.070	0.14	0.27	1.0	U	AM
Potassium 40	13966-00-2	U		1.4		U	GAM
Cobalt 60	10198-40-0	U		0.054	0.050	U	GAM
Cesium 137	10045-97-3	U		0.042	0.10	U	GAM
Radium 226	13982-63-3	U		0.10	0.10	U	GAM
Radium 228	15262-20-1	U		0.20	0.20	U	GAM
Europium 152	14683-23-9	U		0.098	0.10	U	GAM
Europium 154	15585-10-1	U		0.14	0.10	U	GAM
Europium 155	14391-16-3	U		0.12	0.10	U	GAM
Thorium 228	14274-82-9	U		0.065		U	GAM
Thorium 232	TH-232	U		0.20		U	GAM
Uranium 235	15117-96-1	U		0.17		U	GAM
Uranium 238	U-238	U		5.3		U	GAM
Americium 241	14596-10-2	U		0.16		U	GAM

Remaining Sites Confirmation Smplng

QC-BLANK #55720

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/27/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0169

7707-003

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7707 | Client/Case no Hanford | SDG K0169

Contact Melissa C. Mannion | Contract No. 630

Lab sample id R601053-03 | Client sample id Lab Control Sample

Dept sample id 7707-003 | Material/Matrix SOLID

SAF No RC-030

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	150	15	5.3	10		93A	229	9.2	66	77-123	70-130
Gross Beta	208	11	6.0	15		93B	217	8.7	96	76-124	70-130
Nickel 63	265	8.4	4.1	30		NI_L	270	11	98	83-117	80-120
Total Strontium	11.0	0.44	0.17	1.0		SR	10.8	0.43	102	82-118	80-120
Technetium 99	126	3.9	0.59	15		TC	120	4.8	105	82-118	80-120
Total Uranium (ug/g)	37.4	4.3	0.16	1.0		U_T	36.2	1.4	103	77-123	80-120
Uranium 233/234	18.3	1.3	0.60	1.0		U	19.3	0.77	95	86-114	80-120
Uranium 235	16.3	1.2	0.095	1.0		U	15.7	0.63	104	85-115	80-120
Uranium 238	19.4	1.3	0.58	1.0		U	21.0	0.84	92	87-113	80-120
Plutonium 238	26.9	2.9	0.25	1.0		PU	26.2	1.0	103	81-119	80-120
Plutonium 239/240	30.0	3.1	0.25	1.0		PU	29.0	1.2	103	81-119	80-120
Americium 241	23.0	2.4	0.24	1.0		AM	22.4	0.90	103	81-119	80-120
Cobalt 60	1.72	0.098	0.060	0.050		GAM	1.54	0.062	112	72-128	80-120
Cesium 137	1.38	0.071	0.057	0.10		GAM	1.36	0.054	102	75-125	80-120

Remaining Sites Confirmation Smplng

QC-LCS #55719

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/27/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0169

7707-005 J10VL5

DUPLICATE

SDG 7707 Client/Case no Hanford SDG K0169

Contact Melissa C. Mannion Contract No. 630

DUPLICATE		ORIGINAL			
Lab sample id	R601053-05	Lab sample id	R601053-01	Client sample id	J10VL5
Dept sample id	7707-005	Dept sample id	7707-001	Location/Matrix	100-D-65 SOLID
		Received	01/11/06	Collected/Weight	01/05/06 10:30 437.5 g
% solids	100.0	% solids	100.0	Custody/SAF No	RC-030-047 RC-030

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Gross Alpha	2.40	2.6	3.7	10	U	93A	5.38	3.3	4.0		77	168	1.4
Gross Beta	21.4	4.5	5.5	15		93B	20.0	4.7	5.9		7	57	0.4
Nickel 63	44.6	3.3	3.3	30		NI_L	44.5	3.5	3.7		0	27	0
Total Strontium	0.203	0.12	0.20	1.0		SR	0.206	0.11	0.17		1	121	0
Technetium 99	-0.063	0.38	0.75	15	U	TC	-0.099	0.21	0.67	U	-		0.2
Total Uranium (ug/g)	1.21	0.13	0.016	1.0		U_T	1.21	0.13	0.016		0	30	0
Uranium 233/234	0.647	0.19	0.10	1.0		U	0.547	0.18	0.11		17	67	0.8
Uranium 235	0	0.032	0.12	1.0	U	U	0	0.036	0.14	U	-		0
Uranium 238	0.462	0.16	0.10	1.0		U	0.384	0.15	0.11		18	79	0.7
Plutonium 238	0.084	0.084	0.32	1.0	U	PU	0	0.068	0.26	U	-		1.6
Plutonium 239/240	0	0.084	0.32	1.0	U	PU	0.034	0.068	0.26	U	-		0.6
Americium 241	0.036	0.072	0.27	1.0	U	AM	0.106	0.14	0.27	U	-		0.9
Potassium 40	U		12		U	GAM	U		9.1	U	-		0.4
Cobalt 60	1.02	0.093	0.066	0.050		GAM	1.06	0.10	0.076		4	37	0.3
Cesium 137	5.42	0.14	0.10	0.10		GAM	5.71	0.16	0.12		5	32	0.5
Radium 226	U		0.16	0.10	U	GAM	U		0.50	U	-		1.3
Radium 228	U		0.70	0.20	U	GAM	U		0.70	U	-		0
Europium 152	9.26	0.22	0.19	0.10		GAM	11.2	0.35	0.31		19	33	1.7
Europium 154	U		1.1	0.10	U	GAM	U		1.0	U	-		0.1
Europium 155	U		0.25	0.10	U	GAM	U		0.24	U	-		0.1
Thorium 228	U		0.37		U	GAM	U		0.48	U	-		0.4
Thorium 232	U		0.70		U	GAM	U		0.70	U	-		0
Uranium 235	U		0.29		U	GAM	U		0.31	U	-		0.1
Uranium 238	U		10		U	GAM	U		11	U	-		0.1
Americium 241	U		0.26		U	GAM	U		0.21	U	-		0.3

Remaining Sites Confirmation Smplng

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/27/06